

## MACHINE SPECIFICATIONS (SELECTION SHEET)

**PUMA 4100A[LA]  
PUMA 4100B[LB]  
PUMA 4100C[LC]**

**HORIZONTAL TURNING CENTER**

Draft	Correction	Approval
진민식	조선우	권성우
9/5	9/5	9/5

**Confirmed by Control Technology Team 1**  
**Issued by Product Development Team 1**

Date : Sep. 2014

DOOSAN INFRACORE CO., LTD.

## HORIZONTAL TURNING CENTER

## PUMA 4100 [L]

## MACHINE SPEC. SELECTION SHEET



## 1. GENERAL SPECIFICATION

ITEM	UNIT	SPECIFICATION			SELECTION		
		PUMA 4100A [LA]	PUMA 4100B [LB]	PUMA 4100C [LC]			
CAPACITY	SWING OVER BED	mm	790		DEFAULT		
	SWING OVER SADDLE	mm	590				
	MAX. TURNING DIAMETER	mm	550				
	RECOMMENDED TURNING DIAMETER	mm	315	380			
	MAX. TURNING LENGTH	mm	1,079 [2,129]	1,043 [2,093]			
	MAX. ALLOWABLE WORKPIECE WEIGHT (INCLUDING CHUCK)	CHUCK WORK	kg	400			
		SHAFT WORK	kg	1,100 [1,600 <sup>(3)</sup> ]			
	BAR WORKING DIAMETER	mm	102	116.5			
TRAVEL	X-AXIS	mm	352 (77+275)				
	Z-AXIS	mm	1,105 [2,155]				
ACCURACY	POSITIONING	X-AXIS	mm	0.01	DEFAULT		
		Z-AXIS	mm	0.02			
	REPEATABILITY	X-AXIS	mm	+/-0.002			
		Z-AXIS	mm	+/-0.003			
MACHINE DIMENSION	LENGTH	mm	4654 [5774]				
	WIDTH	mm	2055 [2275]				
	HEIGHT	mm	2194 [2,222]				
MACHINE WEIGHT (NET) <sup>(1)</sup>		kg	9,450 [10,900]	9,950 [11,400]	10,450 [11,900]		
HEIGHT FROM FLOOR TO SPINDLE CENTER		mm	1,127				
BASE STRUCTURE	BED SLANT ANGLE	deg	45			SELECTIVE	
	GUIDEWAY TYPE	-	BOX GUIDE				
UTILITY	CONTROL POWER	-	3Ph-AC220V / 60Hz			DEFAULT	
	REQUIRED POWER CAPACITY	kVA	38.40 [39.32]	42.25 [43.17]	51.05 [51.97]		
		kVA	42.25 [43.17]	51.05 [51.97]	51.05 [51.97]		
	COMPRESSED AIR SUPPLY	PRESSURE	Mpa	0.5			
		CONSUMPTION <sup>(2)</sup>	NL/min	0			
MACHINE COLOR		-	DOOSAN 4-TONE COLOR MT DARK GRAY (5.3PB 3.0/0.4) MT MIDDLE GRAY (1.4RP 4.8/0.1) MT LIGHT GRAY (7.3B 7.8/0.4) MT BLUE (6.1PB 5.9/7.6)			SELECTIVE	
		-	USER DEFINED				
CNC CONTROL		-	FANUC 32i DOOSAN-FANUC i Series			SELECTIVE	
		-					

(1) The machine weight is measured with standard accessories and features fitted.

(2) Compressed air consumption is measured in standard specification. The actual value may differ from the specified here, depending on the optional features and peripheral equipment.

Please contact Doosan or your regional manager.

(3) This value is based on using steady rest.

## 2. MAIN SPINDLE

ITEM	UNIT	SPECIFICATION			SELECTION	
		PUMA 4100A [LA]	PUMA 4100B [LB]	PUMA 4100C [LC]		
MAIN SPINDLE	DRIVE MECHANISM	-	BELT-DRIVE			
	STANDARD CHUCK SIZE	mm	315(12")	380(15")	530(21")	
	SPINDLE NOSE	ASA	A2-11	A2-11	A1-15	
	SPINDLE BEARING DIAMETER (FRONT)	mm	160	180	240	
	SPINDLE THROUGH HOLE DIAMETER	mm	115	132	181	
	SPINDLE SPEED	r/min	3,000	2,000	1,500	
	BORE OF DRAW TUBE	mm	103	117.5	166.5	
SPINDLE MOTOR	STANDARD MOTOR (DOOSAN GEAR BOX)	MOTOR TYPE	-	18+DI GB	22+DI GB	STD.
		MOTOR POWER (30min/CONT.)	kW	22 / 18.5	26 / 22	
		HIGH WINDING POWER RANGE	r/min	750 ~ 3,000	500 ~ 2,000	
		LOW WINDING POWER RANGE	r/min	211 ~ 843.9	140.4 ~ 561.8	
		HIGH GEAR RATIO	-	1:2	1:3	
		LOW GEAR RATIO	-	1:7.11	1:10.68	
		MAX. SPINDLE TORQUE FOR TURNING	Nm	995	1,767	
	OPTION MOTOR 1 (BARUFFALDI GEAR BOX)	MOTOR TYPE	-	22+BF GB	30+BF GB	OPT. SELECTIVE
		MOTOR POWER (30min/CONT.)	kW	26 / 22	37 / 30	
		HIGH WINDING POWER RANGE	r/min	1000 ~ 3,000	580.8 ~ 2,000	
		LOW WINDING POWER RANGE	r/min	250.4 ~ 1001.7	145.2 ~ 757.6	
		HIGH GEAR RATIO	-	1:1.5	1:1.98	
		LOW GEAR RATIO	-	1:5.99	1:7.92	
		MAX. SPINDLE TORQUE FOR TURNING	Nm	991	2,432	
	OPTION MOTOR 2 (HIGH TORQUE)	MOTOR TYPE	-	N/A	N/A	OPT.
		MOTOR POWER (30min/CONT.)	kW	N/A	N/A	
		HIGH WINDING POWER RANGE	r/min	N/A	N/A	
		LOW WINDING POWER RANGE	r/min	N/A	N/A	
		HIGH GEAR RATIO	-	N/A	N/A	
		LOW GEAR RATIO	-	N/A	N/A	
		MAX. SPINDLE TORQUE FOR TURNING	Nm	N/A	N/A	

## 3. TAIL STOCK

ITEM	UNIT	SPECIFICATION			SELECTION		
		PUMA 4100A [LA]	PUMA 4100B [LB]	PUMA 4100C [LC]			
TAIL STOCK 1 (MANUAL)	DRIVING MECHANISM		MANUAL (DRIVE BAR + CARRIAGE)			STD. OPT.	
	QUILL DIAMETER	mm	120				
	QUILL TRAVEL	mm	120				
	TAIL STOCK TRAVEL	mm	1,000 [2,050]				
	MAX. QUILL THRUST FORCE	kN	14.3				
	QUILL CYLINDER AREA	cm <sup>2</sup>	26.5				
TAIL STOCK 2 (PROGRAMMABLE)	DRIVING MECHANISM		PROGRAM (DRIVE BAR + CARRIAGE)			SELECTIVE OPT.	
	QUILL DIAMETER	mm	120				
	QUILL TRAVEL	mm	120				
	TAIL STOCK TRAVEL	mm	1,000 [2,050]				
	MAX. QUILL THRUST FORCE	kN	14.3				
	QUILL CYLINDER AREA	cm <sup>2</sup>	26.5				
TAIL STOCK CENT	TAIL STOCK CENTER	LIVE CENTER	MT	#6			
		BUILT-IN TYPE DEAD CENTER	MT	#5			

## 4. TURRET

ITEM	UNIT	SPECIFICATION			SELECTION					
		PUMA 4100A [LA]	PUMA 4100B [LB]	PUMA 4100C [LC]						
TURRET 1	TOOL HOLDER MOUNT TYPE	-	DI Base Holder			STD. OPT.				
	NUMBER OF TOOL STATIONS	EA	12	10	10					
	CURVIC COUPLING DIAMETER	mm	320							
	TURRET CLAMPING FORCE	kN	142							
	TURRET INDEX MOTOR	-	RG28TC (Servo)							
	TURRET INDEX MOTOR POWER	kW	2.8							
	TURRET INDEXING TIME	1-STATION SWIVEL	sec	0.25						
		1-STATION INDEX	sec	0.9						
		FULL STATION INDEX	sec	1.9						
	OD TOOL SIZE	mm	32 x 32							
	BORING BAR DIAMETER	mm	Φ60							
TURRET 2	TOOL HOLDER MOUNT TYPE	-	DI Base Holder			SELECTIVE OPT.				
	NUMBER OF TOOL STATIONS	EA	10	12	12					
	CURVIC COUPLING DIAMETER	mm	320							
	TURRET CLAMPING FORCE	kN	142							
	TURRET INDEX MOTOR	-	RG28TC (Servo)							
	TURRET INDEX MOTOR POWER	kW	2.8							
	TURRET INDEXING TIME	1-STATION SWIVEL	sec	0.25						
		1-STATION INDEX	sec	0.9						
		FULL STATION INDEX	sec	1.9						
	OD TOOL SIZE	mm	32 x 32							
	BORING BAR DIAMETER	mm	Φ60							

## 5. AXES SYSTEM

ITEM	UNIT	SPECIFICATION			SELECTION
		PUMA 4100A [LA]	PUMA 4100B [LB]	PUMA 4100C [LC]	
RAPID TRAVERSE RATE	X-AXIS	m/min	16		DEFAULT
	Z-AXIS	m/min	20 [18]		
RAPID TRAVERSE RATE	X-AXIS	msec	120		DEFAULT
	Z-AXIS	msec	160		
ACCELERATION/DECELERATION TIME	X-AXIS	mm/rev	500		DEFAULT
	Z-AXIS	mm/rev	500		
MAX. CUTTING FEEDRATE	X-AXIS	N	15,551		DEFAULT
	Z-AXIS	N	16,965 [17,907]		
CONTINUOUS THRUST FORCE	X-AXIS	N	24,881		DEFAULT
	Z-AXIS	N	27,143 [28,651]		
INTERMITTENT THRUST FORCE	X-AXIS	mm	40 X 8		DEFAULT
	Z-AXIS	mm	50 X 10 [50 X12]		
BALLSCREW (DIAMETER X LEAD)	X-AXIS	kW	4		DEFAULT
	Z-AXIS	kW	7.0 [6.0]		
SERVO MOTOR POWER(MODEL)	X-AXIS	-	1 : 1		DEFAULT
	Z-AXIS	-	1 : 1		
GEAR RATIO	X-AXIS	ALL AXES	ABSOLUTE		DEFAULT
	Z-AXIS	-	(HEIDENHAIN)	OPT.   SELECTIVE	
FEEDBACK SYSTEM	ENCODER	-	(HEIDENHAIN)	OPT.   SELECTIVE	DEFAULT
	LINEAR SCALE	-			
GUIDE WAY SPAN	BED(Z-AXIS)	mm	420		DEFAULT
	SADDLE(X-AXIS)	mm	360		
	BED(TAIL STOCK)	mm	300		

## 6. OIL HYDRAULIC SYSTEM

ITEM	UNIT	SPECIFICATION			SELECTION
		PUMA 4100A [LA]	PUMA 4100B [LB]	PUMA 4100C [LC]	
HYDRAULIC	TANK CAPACITY	L	14		DEFAULT
	PUMP TYPE	-	PISTON PUMP		
	MOTOR CAPACITY	kW	2.2		
	OPERATING PRESSURE	Mpa	4		
	COOLING SYSTEM	-	RADIATOR + FAN		
	FLOW RATE	L/min	25 / 23 (60 / 50Hz)		
	VISCOSITY GRADE OF OIL	-	ISO VG32		
LUBRICATION	TANK CAPACITY	L	4.3		DEFAULT
	PUMP TYPE	-	Gear Pump		
	PUMP MOTOR POWER	W	120		
	DISCHARGE PRESSURE	Mpa	1.6±0.1		
	DISCHARGE VOLUME	L/min	0.1 (60 / 50Hz)		
	VISCOSITY GRADE OF OIL	-	ISO VG68		
	DISTRIBUTOR TYPE	-	METERING		

## 7. COOLANT SYSTEM

ITEM		UNIT	SPECIFICATION			SELECTION			
			PUMA 4100A [LA]	PUMA 4100B [LB]	PUMA 4100C [LC]				
COOLANT TANK	RIGHT DISPOSAL	TANK CAPACITY	L	280 [370]		DEFAULT			
		COOLANT OIL	TYPE	WELL-CUT B 30					
COOLANT PUMP FOR MAIN TURRET	PUMP1 (1.5 BAR) <sup>(1)</sup>	PUMP MOTOR POWER	kW	0.4		STD.			
		FILTRATION	Mesh	20 (TANK SCREEN FILTER)					
		MAX. PRESSURE	Mpa	0.15 / 0.1 (60 / 50 Hz)					
		MAX. FLOW RATE	L/min	40					
	PUMP 2 (4.5 BAR) <sup>(1)</sup>	PUMP MOTOR POWER	kW	0.9		OPT.			
		FILTRATION	Mesh	20 (TANK SCREEN FILTER)					
		MAX. PRESSURE	Mpa	0.45 / 0.3 (60 / 50 Hz)					
		MAX. FLOW RATE	L/min	30					
COOLANT PUMP FOR MAIN TURRET	PUMP 3 (7 BAR) <sup>(1)</sup>	PUMP MOTOR POWER	kW	1.5		OPT.			
		FILTRATION	Mesh	20 (TANK SCREEN FILTER)					
		MAX. PRESSURE	Mpa	0.7 / 0.5 (60 / 50 Hz)					
		MAX. FLOW RATE	L/min	30					
	PUMP 4 (10 BAR) <sup>(1)</sup>	PUMP MOTOR POWER	kW	2.2		OPT.			
		FILTRATION	Mesh	20 (TANK SCREEN FILTER)					
		MAX. PRESSURE	Mpa	1.0 / 0.7 (60 / 50 Hz)					
		MAX. FLOW RATE	L/min	30					
COOLANT PUMP FOR MAIN TURRET	PUMP 5 (14.5 BAR) <sup>(1)</sup>	PUMP MOTOR POWER	kW	3.7		OPT.	SELECTIVE		
		FILTRATION	Mesh	20 (TANK SCREEN FILTER)					
		MAX. PRESSURE	Mpa	1.45 / 1.0 (60 / 50 Hz)					
		MAX. FLOW RATE	L/min	30					
	PUMP 6 (28 BAR) <sup>(1)</sup>	PUMP MOTOR POWER	kW	4		OPT.			
		FILTRATION	µm	20 (TANK SCREEN FILTER)					
		MAX. PRESSURE	Mpa	2.8 / 1.95 (60 / 50 Hz)					
		MAX. FLOW RATE	L/min	20					
COOLANT PUMP FOR MAIN TURRET	PUMP 7 (70 BAR) <sup>(1)</sup>	PUMP MOTOR POWER	kW	5.5		OPT.			
		FILTRATION	µm	25 (DUAL BAG FILTER) WITH CLOGGING ALARM					
		MAX. PRESSURE	Mpa	7					
		MAX. FLOW RATE	L/min	30					
	PUMP 8 (70 BAR) <sup>(1)</sup>	PUMP MOTOR POWER	kW	7.5		OPT.			
		FILTRATION	µm	10 (PAPER FILTER)					
		MAX. PRESSURE	MPa	7.0					
		MAX. FLOW RATE	L/min	20					
COOLANT OPTION	COOLANT CHILLER*		SET	1		OPT.	SELECTIVE		
	OIL SKIMMER		SET	1					
	COOLANT PRESSURE SWITCH		SET	1					
	COOLANT LEVEL SWITCH		SET	1					

(1) MEASURED AT PUMP OUTLET WITH 60Hz POWER.

## 8. WORK HOLDING DEVICE

	ITEM	UNIT	SPECIFICATION			SELECTION		
			PUMA 4100A [LA]	PUMA 4100B [LB]	PUMA 4100C [LC]			
HYDRAULIC CHUCK FOR MAIN SPINDLE	STANDARD CHUCKING WITH SEOAM	CHUCK SPEC. (STROKE)	- (mm)	CGH-12 (24)	CAH-15 (23)	CGH-21 (23)	STD. OPT. OPT. OPT. OPT. OPT. OPT. OPT. OPT. OPT. OPT. OPT.	
		CYLINDER SPEC. (STROKE)	- (mm)	YSGH-12 (35)	YSHL-15 (50)	YSHL-21 (51)		
	OPTION CHUCKING WITH SAMCHULLY	CHUCK SPEC. (STROKE)	- (mm)	MH-212 (23)	HCH-15 (23)	MH-221 (23)		
		CYLINDER SPEC. (STROKE)	- (mm)	SH21010 (35)	SHL-25011 (50)	SYHL-2816 (51)		
	OPTION CHUCKING WITH SEOAM BIGGER CHUCK	CHUCK SPEC.(STROKE)	- (mm)	N/A	CAHA-18 (23)	N/A		
		CYLINDER SPEC.(STROKE)	- (mm)	N/A	YSHL-15 (50)	N/A		
	OPTION CHUCKING WITH SAMCHULLY BIGGER CHUCK	CHUCK SPEC.(STROKE)	- (mm)	N/A	HCH-18 (23)	N/A		
		CYLINDER SPEC.(STROKE)	- (mm)	N/A	SHL-25011 (50)	N/A		
	OPTION CHUCKING WITHOUT CHUCK	CHUCK SPEC.(STROKE)	- (mm)	-	-	-		
		CYLINDER SPEC.(STROKE)	- (mm)	SH21010 (35)	SHL-25011 (50)	SYHL-2816 (51)		
	TWIN CHUCKING*		-	ORDER MADE				
	SPECIAL CHUCKING*		-	PLEASE CONTACT DOOSAN				
	DUAL PRESSURE CHUCKING		-	●			OPT. SELECTIVE	
	CHUCK CLAMP CONFIRMATION		-	●			OPT. SELECTIVE	
	HARDENED & GROUND HARD JAWS	SET		1			OPT. SELECTIVE	
	SOFT JAW <sup>(1)</sup>	SET		1			STD. DEFAULT	
STEADY REST	MANUAL STEADY REST	TYPE 1 (Ø25 ~ Ø200)	SET	●			OPT. OPT. OPT. OPT. OPT. OPT. OPT. OPT.	
		TYPE 2 (Ø50 ~ Ø260)	SET	●				
	HYDRAULIC STEADY REST	SLU-3 (Ø16 ~ Ø152)	SET	●				
		SLU-3.1 (Ø20 ~ Ø165)	SET	●				
		SLU-4 (Ø35 ~ Ø245)	SET	●				
	PROGRAMMABLE STEADY REST (FOLLOW TYPE)	SLU-3 (Ø16 ~ Ø152)	SET	●				
		SLU-3.1 (Ø20 ~ Ø165)	SET	●				
		SLU-4 (Ø35 ~ Ø245)	SET	●				

(1) EACH CHUCK COMES WITH 1SET OF SOFT JAWS AS STANDARD. DEPENDS ON SELECTED CHUCK TYPE, ITS SUPPLYING CAN BE DIFFERENT.

## 9. CHIP DISPOSAL

	ITEM	UNIT	SPECIFICATION			SELECTION		
			PUMA 4100A [LA]	PUMA 4100B [LB]	PUMA 4100C [LC]			
CHIP CONVEYOR	RIGHT DISPOSAL	HINGED BELT TYPE FOR STEEL	SET	1			OPT. OPT. OPT.	
		MAGNETIC SCRAPER TYPE FOR CAST IRON	SET	1				
		SPECIAL CHIP CONVEYOR*	SET	ORDER MADE				
CHIP BUCKET	CAPACITY	FORKLIFT	L	220			OPT. OPT. OPT. OPT. OPT. OPT.	
			L	300				
			L	380				
		ROTATION	L	220				
			L	300				
			L	380				
AIR BLOWER	MAIN SPINDLE CHUCK JAW CLEANING	SET		1			OPT. SELECTIVE	
CHUCK COOLANT	MAIN SPINDLE CHUCK JAW CLEANING	SET		1			OPT. SELECTIVE	
COOLANT GUN		SET		1			OPT. SELECTIVE	
MIST COLLECTOR	INTERFACE (DUCT ONLY)	SET		1 (Ø150mm)			OPT. SELECTIVE	
	INTEGRATED MIST COLLECTOR	SET		1 (Ø150mm)			OPT. SELECTIVE	

## 10. OPTIONAL EQUIPMENTS

ITEM	UNIT	SPECIFICATION			SELECTION	
		PUMA 4100A [LA]	PUMA 4100B [LB]	PUMA 4100C [LC]		
MEASUREMENT	MANUAL TOOL SETTER (MAIN, REMOVABLE)	SET	1	N/A	OPT.	SELECTIVE
	AUTO TOOL SETTER (MAIN, HYDRAULIC)	SET	1		OPT.	SELECTIVE
	IN-MACHINE WORKPIECE MEASURING SYSTEM*	SET	1 (OLP40)		OPT.	SELECTIVE
OTHERS	AIR GUN	SET	1		OPT.	SELECTIVE
	AIR LIMIT	SET	1		OPT.	SELECTIVE
	AUTOMATIC FRONT DOOR WITH SAFETY DEVICE	SET	1		OPT.	SELECTIVE
	AUTOMATIC POWER OFF	SET	1		OPT.	SELECTIVE
	PRESSURE SWITCH FOR CHUCKING PRESSURE CHECK	SET	1		OPT.	SELECTIVE
	ROTARY TYPE WINDOW WIPER	SET	1		OPT.	SELECTIVE
	SIGN/AL TOWER (YELLOW, RED, GREEN)	SET	1		OPT.	SELECTIVE
	TOOL MONITORING SYSTEM	SET	1		OPT.	SELECTIVE

## 11. STANDARD ACCESSORIES

ITEM	UNIT	SPECIFICATION			SELECTION			
		PUMA 4100A [LA]	PUMA 4100B [LB]	PUMA 4100C [LC]				
FOOT SWITCH	SET	Single			DEAFULT			
FRONT GUARD DOOR INTER LOCK	SET	1						
FULL ENCLOSURE CHIP AND COOLANT SHIELD	SET	1						
HAND TOOL KIT (INCLUDING SMALL TOOL FOR OPERATIONS)	SET	1						
LEVELING JACK SCREW & PLATES	SET	1						
MANUALS	SET	1						
SAFETY PRECAUTION NAME PLATES	SET	1						
WORK LIGHT	SET	2						

## &lt; NOTE &gt;

1. DESIGNS AND SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE.
2. ALL VALUES SPECIFIED IN THE DOCUMENT ARE VALID FOR STANDARD ELECTRIC POWER CONDITIONS.(60Hz, 220V)
3. IF YOU HAVE ANY QUESTION REGARDING CONTENTS OR SELECT \* MARKED CONTENT, PLEASE CONTACT DOOSAN.MACHINE TOOLS
4. MACHINE LAY-OUT AND WEIGHT CAN BE CHANGED DEPENDING ON OPTIONS AND PERIPHERAL EQUIPMENT.
5. PLEASE REFER TO LAY-OUT AND FOUNDATION DRAWING REGARDING INSTALLATION/ELECTRIC DEVICE.
6. PRESSURE AND FLOW RATE VALUES OF COOLANT AND HYDRAULIC PUMP ARE GIVEN AT PUMP OUTLET.
7. THE FLOW RATE AND THE PRESSURE OF COOLANT SPECIFIED IN THE DOCUMENT ARE VALID FOR WATER SOLUBLE COOLANT.
8. REFER TO THE SEPARATED SPEC. SHEETS TO REVIEW SPECIFICATION, FUNCTION AND OPTION OF CNC CONTROLLER.